

# **PRODUCTS MANUAL**

## **R3G SERIES**

**2 + 1 Redundant Power Supply**

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## 1.1 INTRODUCTION

First of all, thank you for purchasing R3G Series – 2 + 1 Redundant power supply, the R3G is a 2+1, Hot-swappable/Hot-pluggable, Redundant power supply set, it consists of:

- (1) complete metal frame (nickel-plated)
- (2) 2 + 1 compact size power modules
- (3) backplane board

The R3G Series hot swappable redundant power supply offer a maximum 650 watts of output power. They provide Active Power Factor correction (PFC) feature at full range AC Input complies with IEC 1000-3-2/3 for critical applications.

The power unit's size is compact each power modules built an interior 40 m/m ball bearing DC fan for better ventilation. Particularly an 80 m/m DC Fan built on the rear side of the whole system to make sure a safe working unit. Each power module has designed with 6 outputs including +3.3V, +5V, +12V, -12V, -5V & 5VSB circuits and higher current availability based on Intel ATX12V / EPS12V standards. All you can see on the backplane board is just passive components and this is the key point to a greater Power Supply MTBF.

The unit features a warning sub-system, including LED display, buzzer alarm, TTL signal, I<sup>2</sup>C interface device ( optional feature ) etc., at the same time, it guides user the fast way to find out the power supply Good or Fail condition.

When all the power modules are at normal condition, it balances the load share through its parallel design and results the power system increase reliability.

To really discover the power and ease in using these products, we recommend that you read through this manual carefully.

## 1.2 PACKING

Your R3G box package should consist of the following:

- (A) R3G \*1
- (B) Accessory pack (included one holding bracket for shipment)\*1
- (C) Products' manual \*1

## 1.3 MODEL DESIGNATION

Model number identification:

R3G – 6650P

R3G --- 2 + 1 Redundant Power Supply for 3 U (AC Input)  
6 --- for 6 DC outputs (5V/12V/-5V/-12V/3.3V/5VSB) for  
ATX12V / EPS12V Spec.  
**650** --- total output power, 650 (unit: watt)  
P --- P for built in PFC (full range).

## 1.4 FEATURES

R3G Series --- 2 + 1 Redundant power supply ( w/PFC )  
2+1, Hot swappable, Hot pluggable, AC Input, 650 W output

Compact size, 650W + 350W, PFC, ATX12V / EPS12V outputs

- ◆ True Redundant design (Passive backplane)
- ◆ All circuit been designed in the power module
- ◆ Hot swap, Hot plug ability
- ◆ Full range operations
- ◆ Active Power Factor Correction (PFC) built
- ◆ ATX 650W + 350W output power
- ◆ Balance load sharing design
- ◆ Remote sensing design
- ◆ Meet FCC, CISPR EMI regulation
- ◆ Smart I<sup>2</sup>C interface design (optional feature )
- ◆ Space save / click type handle design
- ◆ Three EMI Line Filter inlets design
- ◆ One piece 40 m/m ball bearing DC fan on power module design
- ◆ A 80 m/m ball bearing DC fan on power system rear side

## 1.5 PRE-INSTALLATION

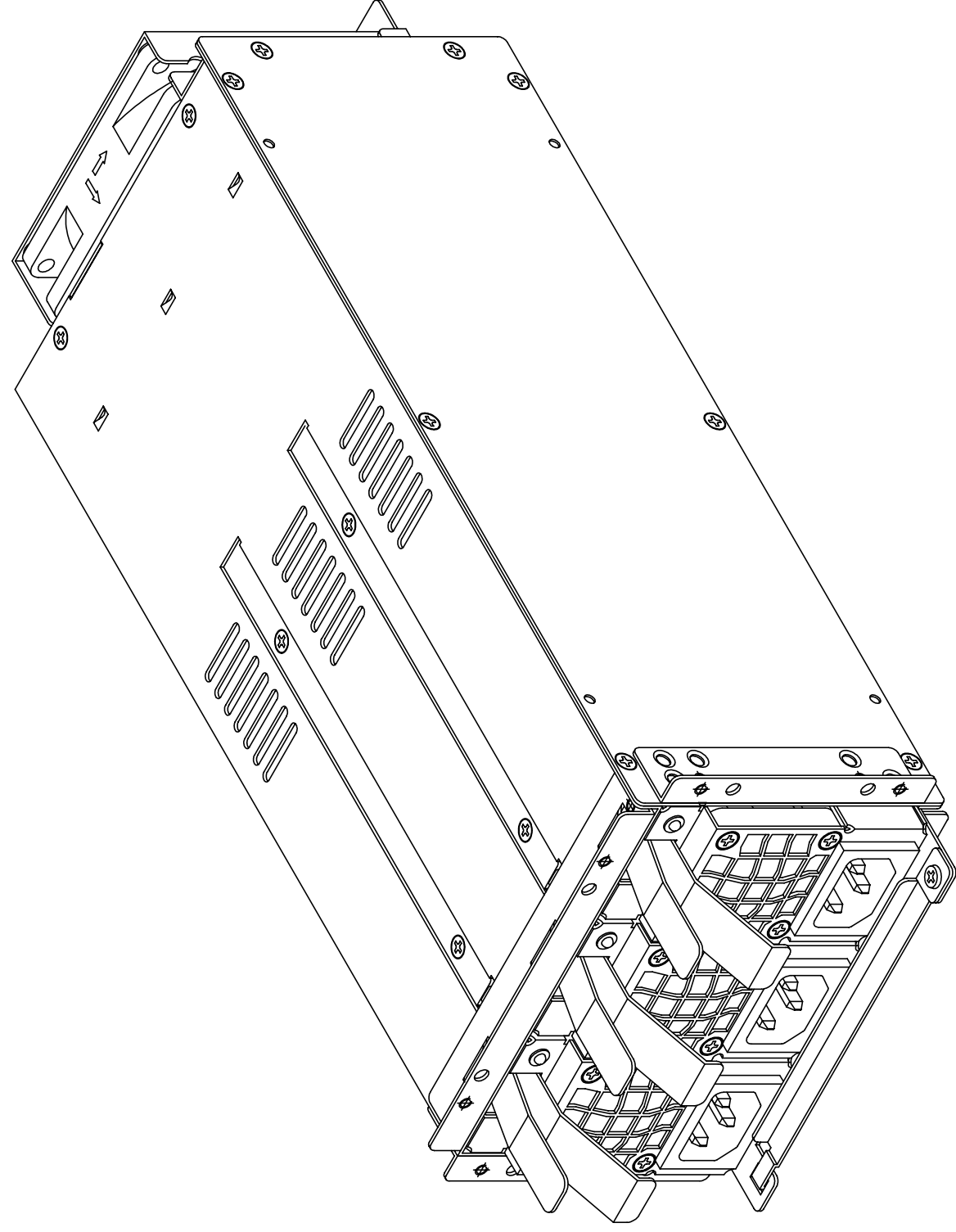
Before installing the R3G unit into the system chassis, please review the following drawings page 4 ~ 8 and find out the best way to match them.

## 1.6 DRAWING (page 4 ~ 8)

## 1.7 SPECIFICATIONS (page 9)

1 2 3 4 5 6 7

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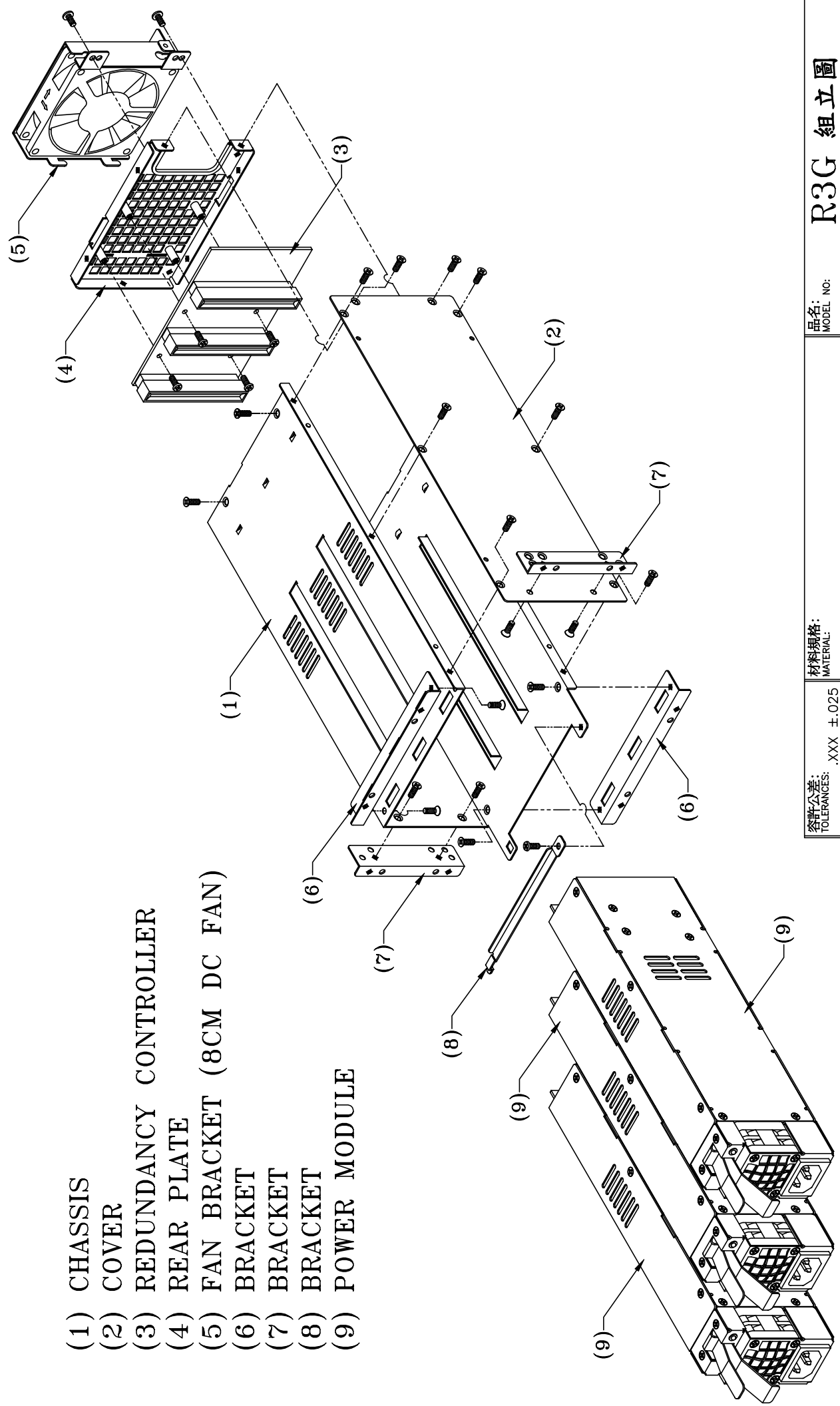


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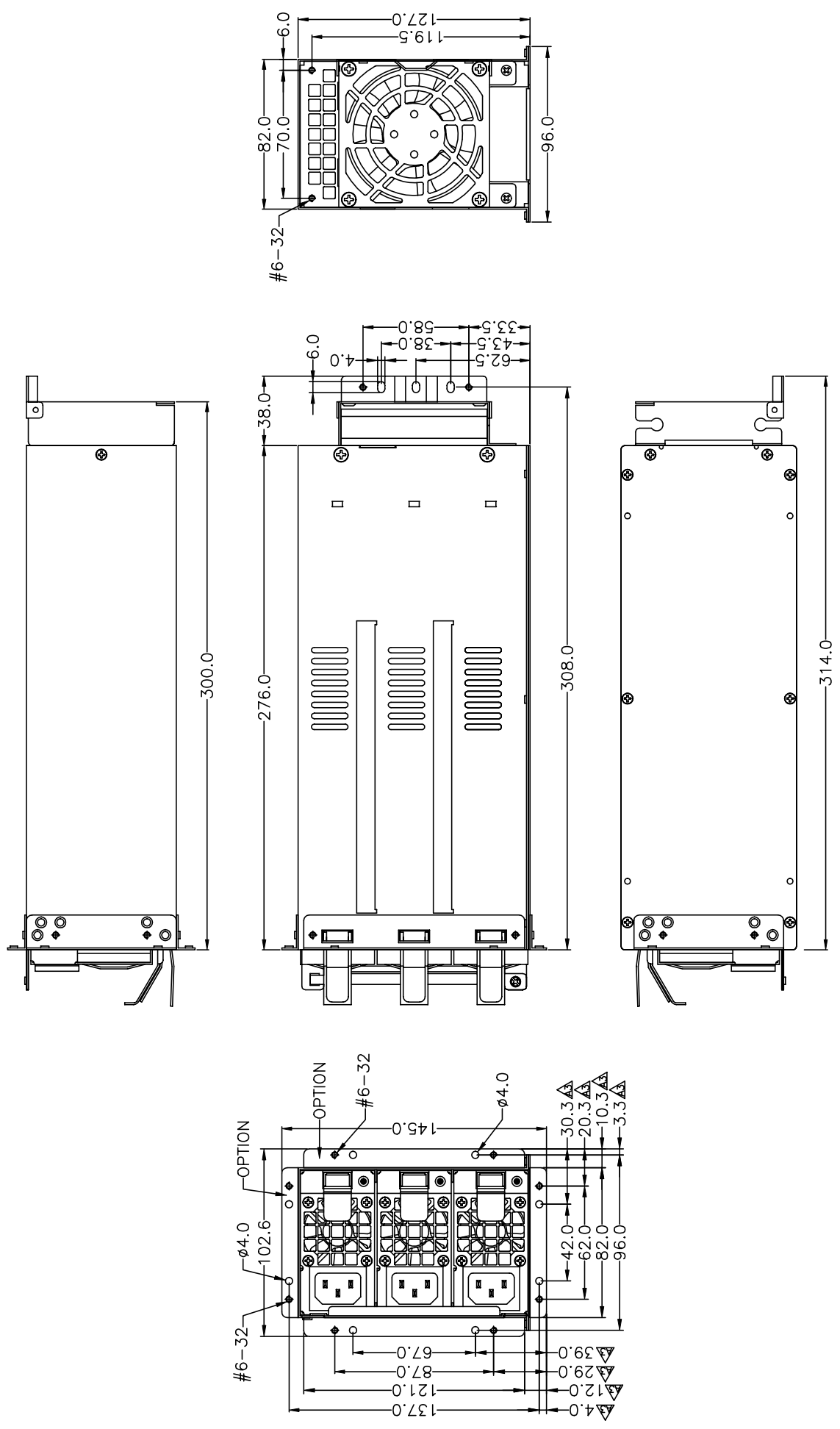
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REVISIONS	DESCRIPTION
DATE	DATE

- (1) CHASSIS
- (2) COVER
- (3) REDUNDANCY CONTROLLER
- (4) REAR PLATE
- (5) FAN BRACKET (8CM DC FAN)
- (6) BRACKET
- (7) BRACKET
- (8) BRACKET
- (9) POWER MODULE



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核准者: APPROVE BY:	料號: PART NO:	圖號: DRAW NO:	權號: FILE NO:
審核者: CHECK BY:	日期: DATE:	單位: UNITS:	規格: SPEC:
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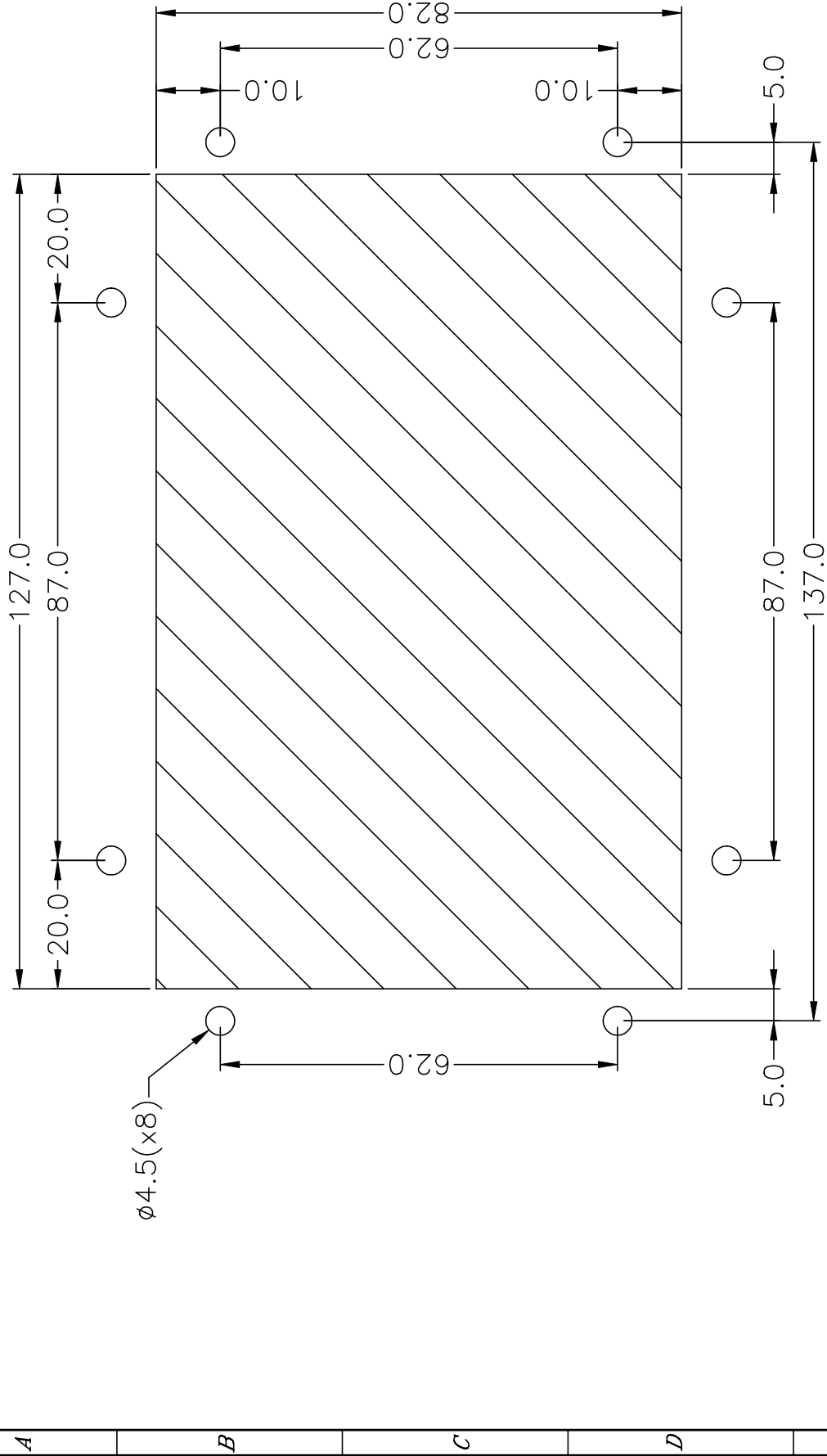
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NOTE: TOLERANCES:  $\pm 0.5\text{mm}$

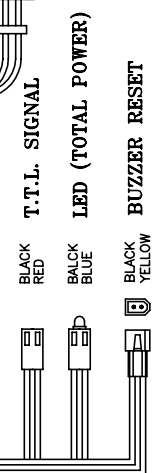
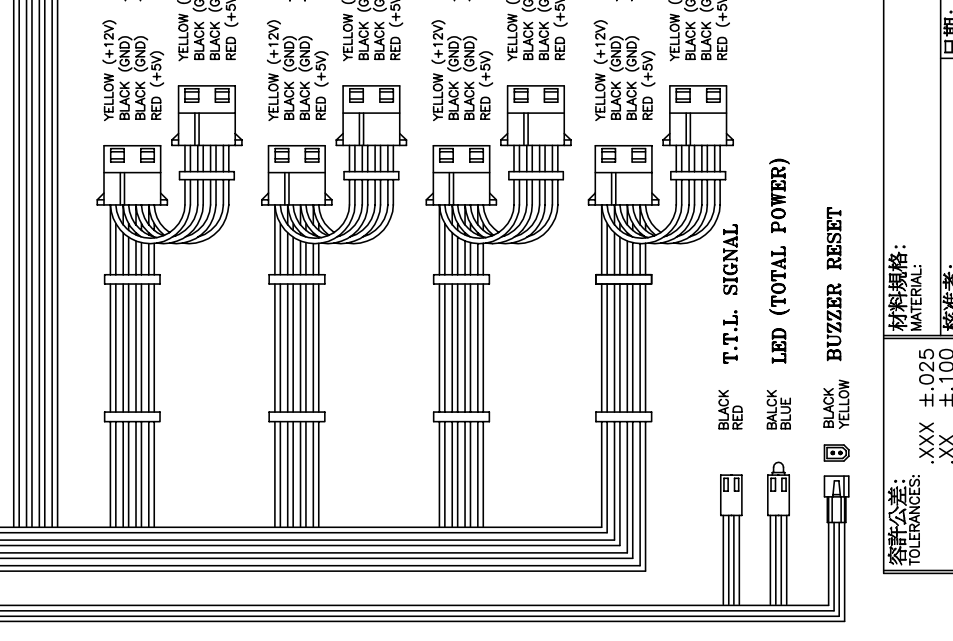
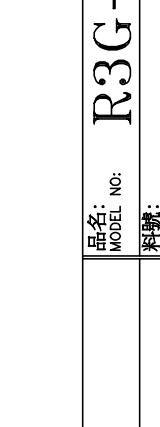
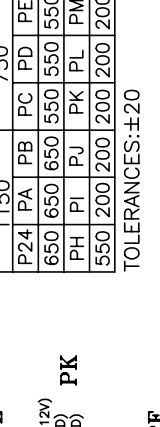
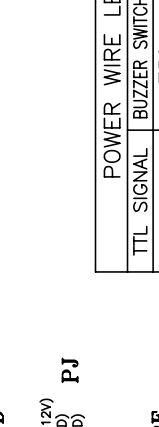
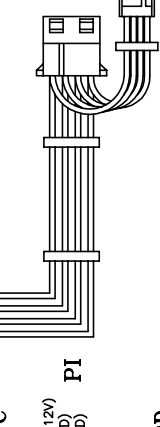
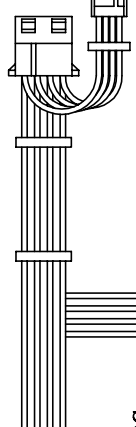
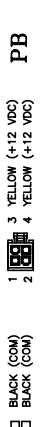
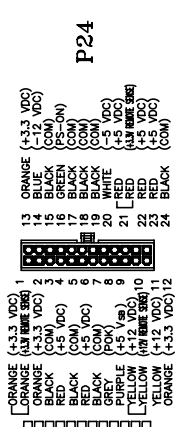
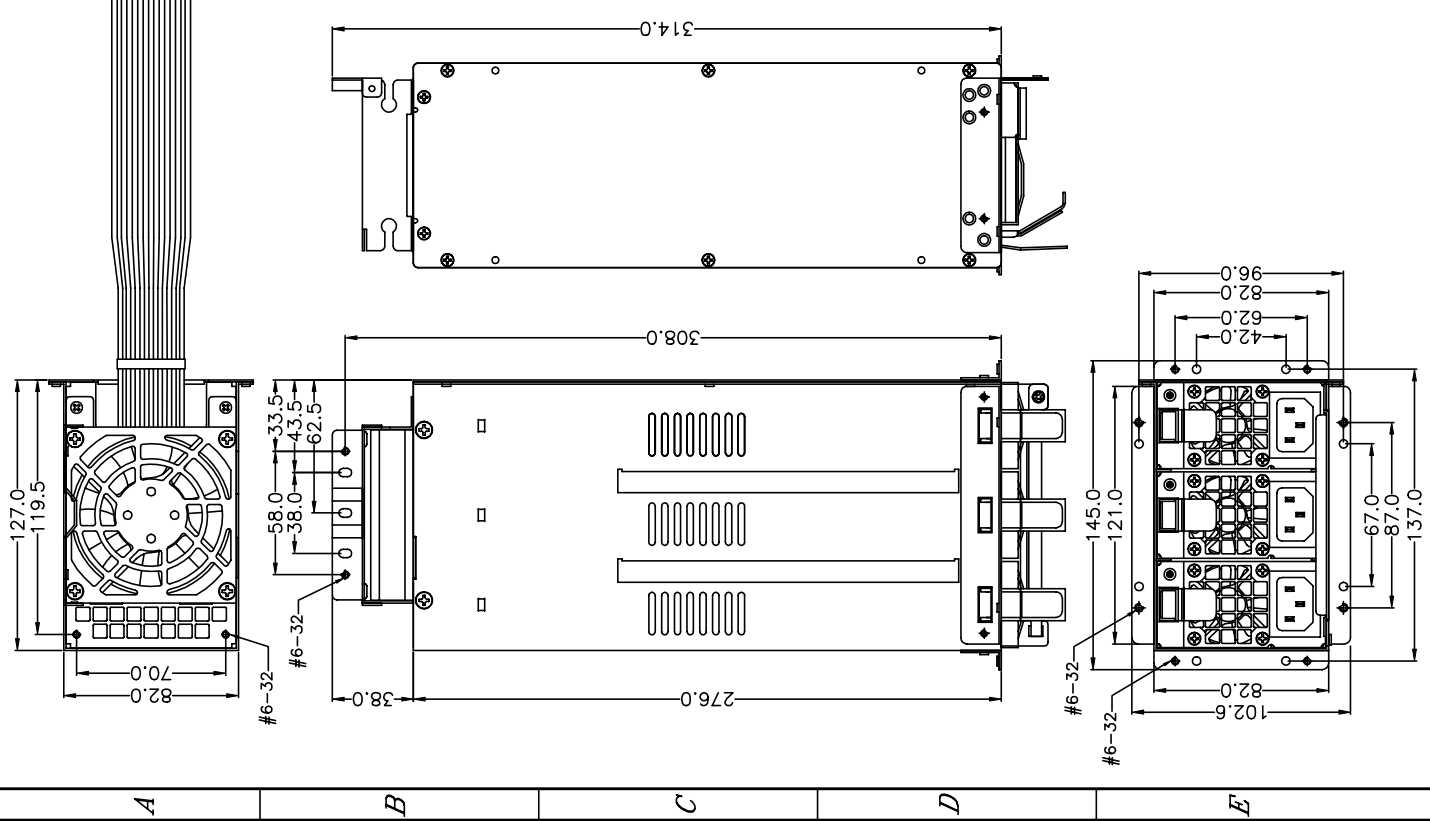




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日期: DATE:	APR-25-2002	規格: SPEC.:	A4
日期: DATE:		編號: SHEET:	OF

NOTE: WITH SIDE BRACKET

REV. NO.	DESCRIPTION	DATE
6	修改 配線	
7	REVISIONS	



TTL SIGNAL	BUZZER SWITCH	LED
1150	750	1150
P24 PA PB PC PD PE PF PG	650 650 650 550 550 550 550	550 550 550 550 550 550
PH PI PJ	200 200 200 200 200 200	200 200 200 200 200 200

TOLERANCES: ±20 UNIT: mm

品名: R3G-6650P  
 MODEL NO:  
 規格: R3G-6650P  
 圖號: R3G0MW04  
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 日期: DATE: MAY-13-2002  
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 日期: DATE: MAY-13-2002

**INPUT CHARACTERISTICS:****R3G-6650P**

- VOLTAGE: 90 ~ 264 VAC FULL RANGE
- FREQUENCY : 47 ~ 63 Hz
- INPUT CURRENT: 9.0 / 5.0 A FOR 115 / 230 VAC
- INRUSH CURRENT: 80A / 100A MAX. FOR 115 / 230 VAC PER POWER MODULE

**OUTPUT CHARACTERISTICS:**

OUTPUT VOLTAGE	OUTPUT CURRENT			REGULATION		OUTPUT
	MIN.[A]	MAX.[A]	PEAK(A)	LOAD	LINE	RIPPLE & NOISE MAX. [P-P]
5V	3.0	60		± 5%	± 1%	50mV
12V	2	40		± 5%	± 1%	100mV
-5V	0.05	1		±10%	± 1%	150mV
-12V	0.05	1		±10%	± 1%	150mV
3.3V	1.0	40		± 5%	± 1%	50mV
+5VSB	0.1	2.5		± 5%	± 1%	50mV

REMARKS: TOTAL CURRENT OF +5V AND + 3.3V NOT EXCEED 70 A

TOTAL +5V AND 3.3V AND 12V POWER NOT EXCEED 630 W

- TEMPERATURE RANGE : OPERATING 0°C --- 40°C, STORAGE -20°C --- 70°C
- HOLD UP TIME: 16 ms MINIMUM AT FULL LOAD & NORMAL INPUT VOLTAGE
- DIELECTRIC WITHSTAND: INPUT / OUTPUT 1500 VAC FOR 1 MINUTE  
INPUT TO FRAME GROUND 1500 VAC FOR 1 MINUTE
- EFFICIENCY: 63% TYPICAL, AT FULL LOAD
- POWER GOOD SIGNAL: ON DELAY 100 ms TO 500 ms, OFF DELAY 1 ms
- OVER LOAD PROTECTION: 110 ~ 160% MAX.  
OVER VOLTAGE PROTECTION:  
**+5V → 5.7V ~ 6.7V, 3.3V → 3.7 ~ 4.7V, 12V → 13.0 ~ 15.0V**
- SHORT CIRCUIT : 5V,12V, 3.3V, AUTO-RECOVERED : 5VSB, -5V, -12V
- EMI NOISE FILTER: FCC CLASS B, CISPR22 CLASS B
- SAFETY: UL 1950, CSA 22.2 NO/ 950, TÜV IEC 950
- REMOTE ON / OFF CONTROL
- FAULTY ALERT METHODS : LED, BUZZER, TTL SIGNAL
- 2 + 1, HOT-SWAPPABLE / HOT-PLUGGABLE REDUNDANCY FUNCTION
- N + 1 BALANCE LOAD SHARING DESIGN ON 5/12/3.3V CHANNEL
- REMOTE SENSING DESIGN
- ISOLATION: BUILT-IN IN THE POWER MODULE
- MEET IEC-1000-3-2 CLASS D ( ACTIVE PFC )
- DIMENSION: 82(H) X 127(W) X 276/300 (D) mm, 276mm -- W/O REAR DC FAN
- COOLING : THREE 40 mm DC FANS ( ONE IN EACH MODULE )  
ONE 80 mm DC FAN ( REAR SIDE )

## 1.8 INSTALLATION & TESTING

Turn off (Remote off) the on/off switch.

Mount the power supply in the system chassis using the proper mounting tool, the mounting holes in the power supply should match up with those in the case. Attach the connectors to the M/B by following the M/B instructions, there are various on connectors / pinouts in both power supply and M/B. They should match each other; otherwise the connection will cause undetectable harms.

Attach all the remaining power supply connections to the various peripherals as needed, these connectors are “keyed”, so there will be only one possible way to connect them.

Before applying power to the system, make sure there are no loose or incorrect connectors. You do not need to worry about the setting of AC Input because of the units' full range or auto voltage selecting features. Double check that all connections to the M/B are matched properly. Maybe you would like to test the redundancy function before you put back the cover of your system chassis. Remote on the on/off switch, you will notice that if the power unit is operating properly, then individual LEDs, the total power warning LED ( please refer to Sec. 1.10 for detail explanation) are lit Green, now remove one of the power modules by pressing the click type handle, the warning buzzer in the power system will sound and the total power warning LED which display the status of the total power supply system will twinkle, the individual LEDs indicating the power supply's status will not light. Meanwhile, the power supply will continue to backup the power output without affecting the computer system's operation.

The warning buzzer will continue sound, the user can reset the warning buzzer by pressing the buzzer reset switch which can be found on the front control panel of the system chassis, the reset switch can be connected by wires lead provided from the power supply system (please refer to Sec. 1.10). Insert the power module which is removed for testing earlier, the sound of the warning buzzer will disappear, the total power warning LED will turn Green again. The LED indicating the status of the power supply will light again, test others power supplies by performing the similar procedure.

If everything works out fine, then turn off (remote off) the power system, now put back the cover of the case and tighten with the screws which you have retained earlier. Now you have completed the installation of the R3G redundant power supply system.

## **1.9 HOT SWAP PROCEDURES**

Please refer to the following when one power module found defective.

- A) Locate the defective power module by examining the individual LED (if LED without light, it indicates the power module is defective).

**\*\*\*WARNING:**

*Please perform the above step carefully otherwise it may cause shut down the whole system.*

**\*\*\*WARNING:**

*Please do not remove the defective power module until you have worn gloves to keep from be burned. This is due to the cover of the power module is been used as heat sink for cooling, usually the temperature is around 50 ~ 60 degree Celsius under full load condition.*

- B) Loosen the bracket screws which hold the power modules
- C) Remove the defective power module by pulling out method

**\*\*\*WARNING:**

*Please put aside the power module await for cooling down. Keep from other people touch it until it is cool.*

- D) Replace a new Good power module, insert the power module into the power system to the end.

- E) Check the LED of the power module lit Green.
- F) Check the LED which indicates the total power system status, that should be from twinkle to Green.
- G) Tighten the screws of bracket which hold the power modules to fix it.
- H) If you want to test this new power module in simulating defective situation. Please refer to the Section 1.8 Installation & Testing Section.

## 1.10 PINOUTS AND FUNCTION OF THE CONNECTORS

**\*\*\* Please be aware of the polarity\*\*\***

### THE BUZZER RESET SWITCH CONNECTOR

PIN#	COLOR	VOLTAGE
1	YELLOW	+5VSB(PULL HIGH)
2	BLACK	GND

### THE SIGNAL CONNECTOR OF POWER RESET

PIN#	COLOR	VOLTAGE
1	RED	TTL SIGNAL
2	BLACK	GND

**TTL signal :**

**Sink current max. 5mA**

**Source current max. 50uA**

**Low Active --- Defective**

**High --- Normal**

## 1.11 TROUBLE SHOOTING

If you have followed these directions correctly, there should be no problem occurred. Some common symptoms are: the system doesn't work, buzzer sound, work for a very short period, etc., please try the following steps to verify and correct it:

1. Check all the connections (correct pinouts, loose connections, wrong direction, etc).
2. Check for short-circuits or defective peripherals by unhooking each peripheral once at a time. When the systems functions again, you have solved the problem.
3. Once you hear the buzzer sound or see the LED twinkle, please be aware of :
  - a. If the load is under the minimum / over the maximum load of each channel (please refer the Sec. 1.7 specification)?
  - b. If each power cord been well plugged into the inlet?

Suppose the above condition been happened, please unplug the power cords, wait for 2 ~ 3 minutes for releasing the protection state, then test it again.

- c. If buzzer still sound or the LED shows power module is defective, please locate which power module is defective, perform hot-swap procedure (please refer to the Sec. 1.9 Hot-swap procedures), sent the defective power module to your vendor for RMA operation.
  - d. If you can not fix the problem, please contact with your vendor for supporting.

### **Note:**

*\*The description stated herein is subject to change without prior notice.*

*\*All brand names and trademarks are the property of their respective owners.*



The “RELIABILITY “ solution to E-application

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**ZIPPY TECHNOLOGY CORP.**  
**POWER DIVISION**

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